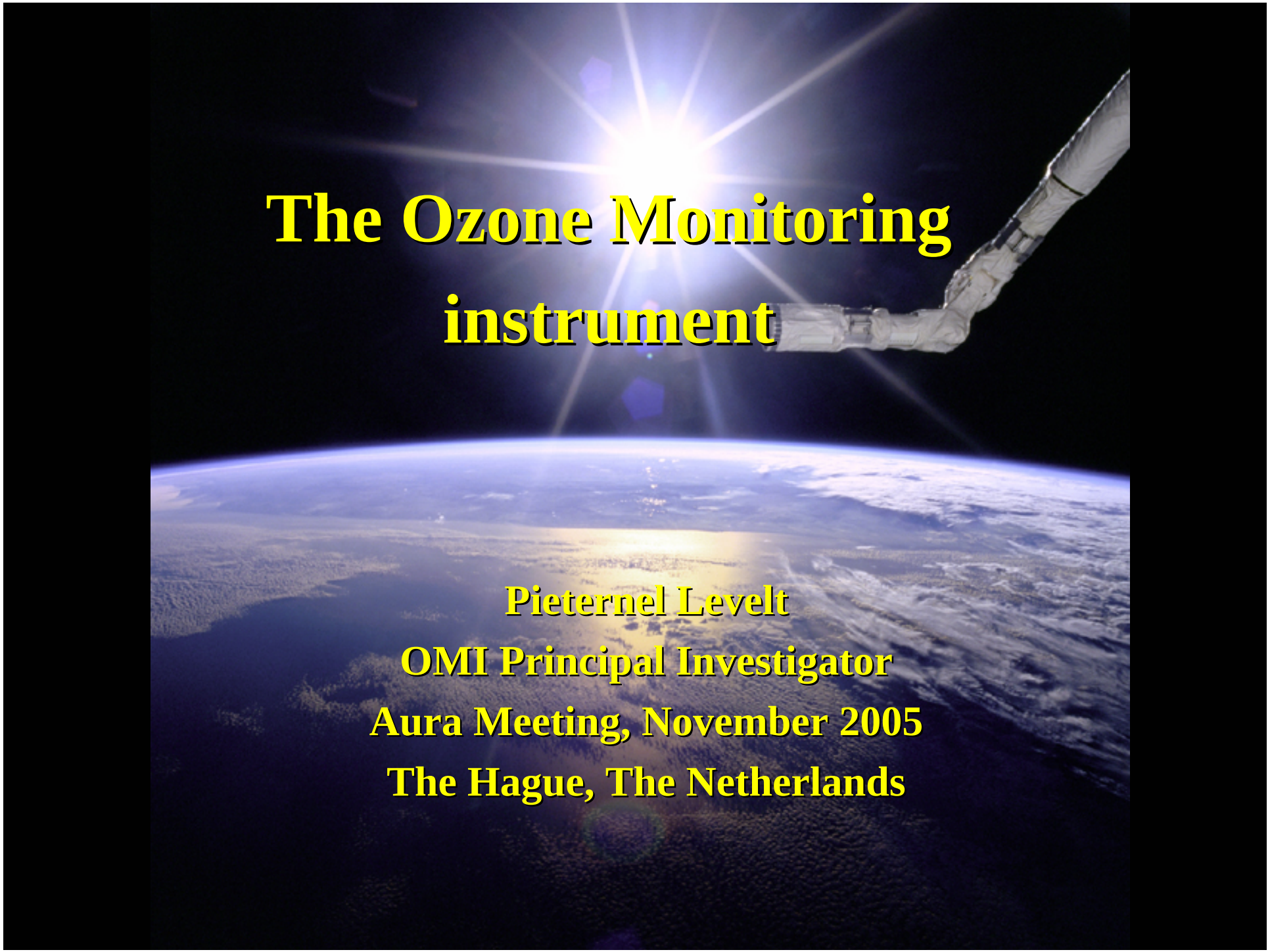


The Ozone Monitoring instrument

Pieternel Levelt

OMI Principal Investigator

Aura Meeting, November 2005

The Hague, The Netherlands

International OMI Team

International OMI Science team

- PI: P.F. Levelt
- dep.PI: G.H.J. van den Oord
- co-PI's: E. Hilsenrath and J.Tamminen
- US ST Leader: P.K. Bhartia
- …. And about 60 - 80 scientists

Industry

- Dutch: DS, TNO-TPD, SRON
- Finnish: VTT, Patria
- USA: Northrop GES USA

Dutch, Finnish and US Space Agencies

- NIVR, FMI and NASA

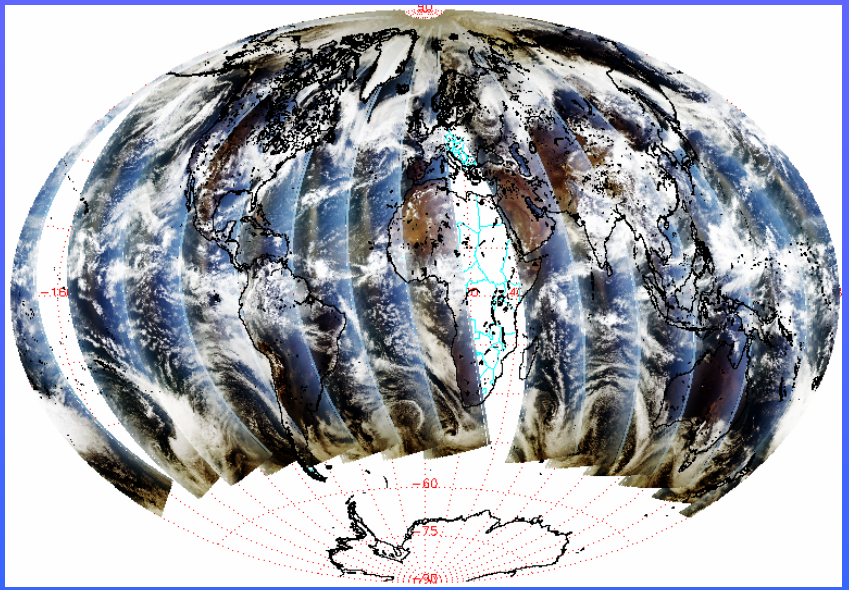
Thanks to OMI Science Team !

PK Bhartia	US OMI Team Leader
Albert Fleig	Dept. TL standard products
Richard McPeters	Dept. TL science
Lawrence Flynn	Ozone algorithm
Jack Fishman	Trop. Ozone algorithm
Kelly Chance	Trace gas algorithm
James Gleason	NO2 algorithm
Joanna Joiner	Cloud algorithm
Omar Torres	Aerosol algorithm
George Mount	Instrument calibration
Donald Heath	Instrument calibration
Richard Cebula	Instrument calibration
Arlin Krueger	SO2 algorithm
Derek Cunnold	Ozone validation
Charles Trepte	Aerosol validation
Ivanka Štajner	Data assimilation
Stanley Sander	Spectroscopy + NO2 validation
Ernie Hilsenrath	US co-PI
Gilbert Leppelmeier	Finnish co-PI
Anssi Mälkki	Finnish Program Leader
Esko Kyrö	Validation
Aapo Tanskanen	

Pieternel Levelt	OMI-Principal Investigator
Bert van den Oord	Deputy PI
Pepijn Veefkind	Ozone column algorithm
Robert Voors	Ozone Profile algorithm
Robert Decae	Aerosol algorithm
Johan de Haan	Cloud algorithm
Folkert Boersma	NO2 algorithm + validation
Ellen Brinksma	Validation + NO2 algorithm
Mark Kroon	Validation
Ruud Dirksen	Instrument calibration.
Marcel Dobber	Instrument calibration
Johan de Haan	Algorithm development
Piet Stammes	Algorithm development
Gerrit de Leeuw	Aerosol algorithm
Roeland van Oss	Ozone Profile algorithm
Jacques Claas	OMI operations
Joke van den Bovenkamp	OMI public outreach
John van der Vegte	OMI data processing
Wim Som de Cerff	OMI data processing
René Noordhoek	OMI scientific secretary
Hennie Kelder	OMI key ST member
Ilse Aben	OMI key ST member
Ivar Isaksen	OMI key ST member
Ulrich Platt	OMI key ST member
Didier Hauglustaine	OMI key ST member
Paul Simon	OMI key ST member

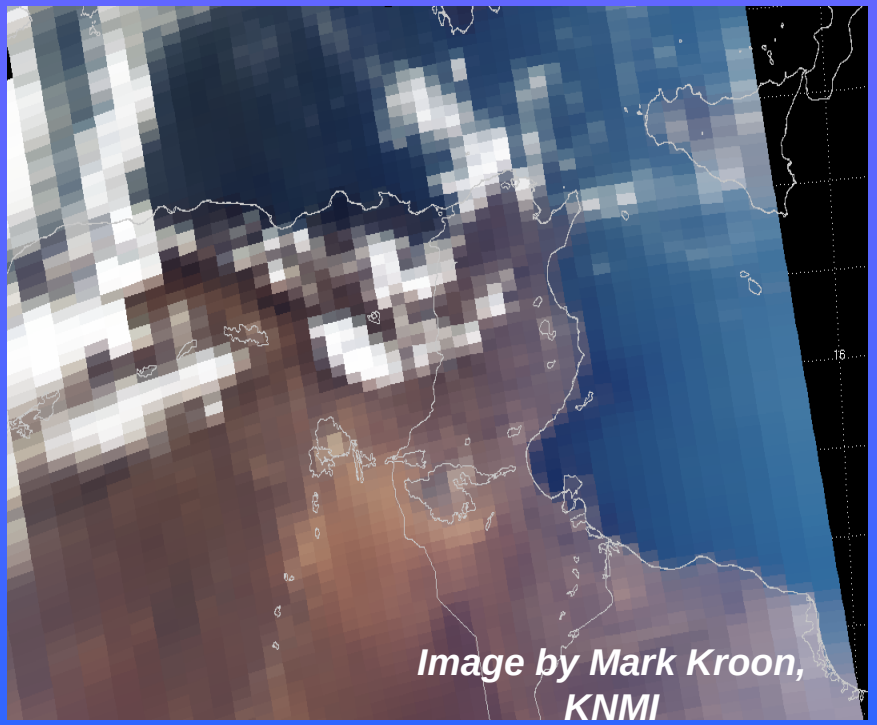
Small Pixels and Daily Global Coverage

13 August 2004



Courtesy: Image by Ruud Dirksen, KNMI

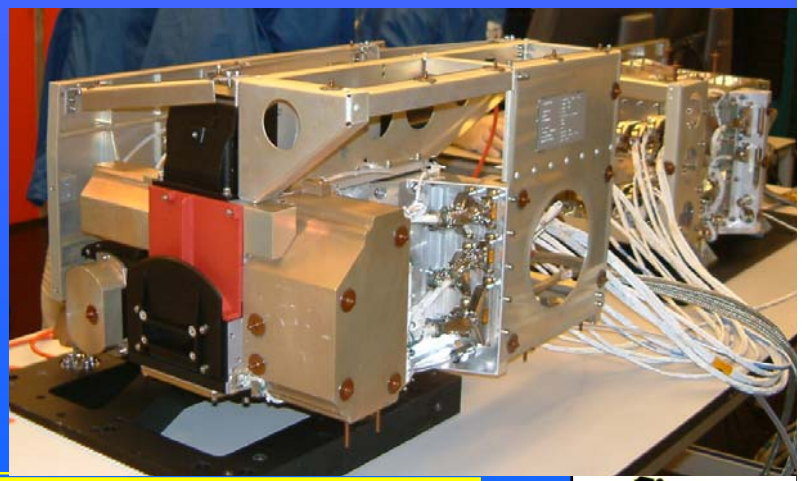
OMI will achieve a global coverage within one day



OMI radiance image showing small pixel size and geolocation verification

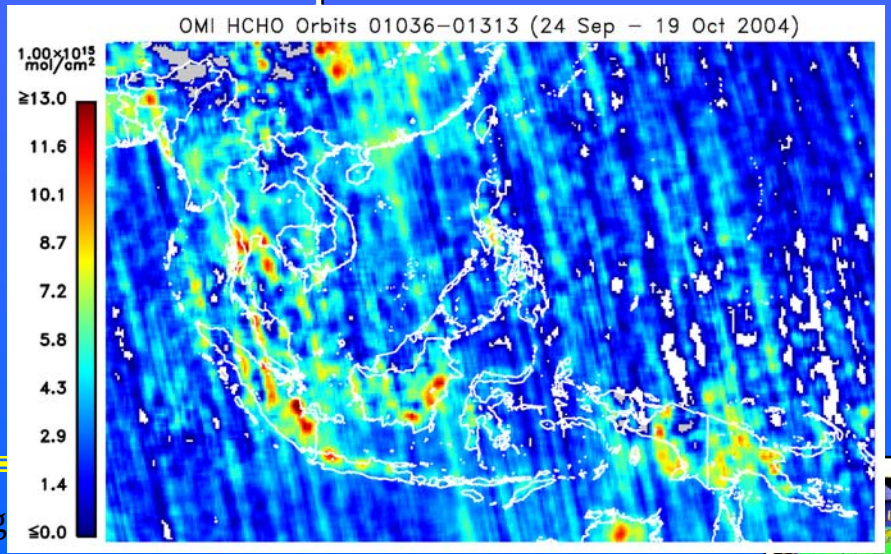
OMI instrument and Operations

- **OMI instrument**
  - performance according to expectations
  - radiometrically stable performance
  - increase in CCD dark current & spikes :
    - Measures were taken resulting in updated OPF and level 0-1b
    - Time dependent OPF planned
- **Operations**
  - Instrument is normally operated, according to baseline
  - Some changes have been made in the in-flight calibration measurements schedule taken at the dark side
  - During the Ozone Hole season, instrument parameters are frequently updated as part of the nominal baseline.



OMI in-flight calibration

- In-flight calibration key data has recently been updated
- Aspects which were improved: dark current correction, wavelength calibration, (ir)radiance calibration, spectral slitfunctions, irradiance goniometry, non-linearity
- Some OMI level 2 data contain stripes in the swath direction: cause is partly linked to CCD dark current. For some level 2 products stripes are removed in post processing the level 2 data. Expectation is that latest level 0-1b will improve the situation.



Presentation Dobber Today

Poster Jaross Wednesday

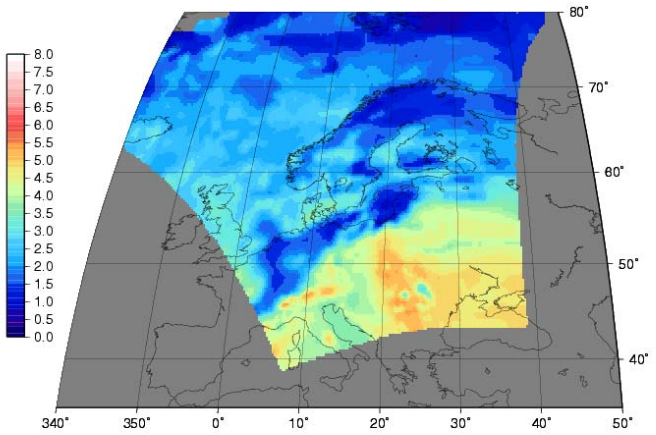
Presentation Kurosu, Wednesday

OMI level 1b and ground segment

- Level 0 – 1b software
  - Since March 2005 the level 0-1 software has been updated to account for stripes (October).

Courtesy: S. Hassinen, A. Tanskanen, J. Tamminen, O. Aulamo, A. Malkki

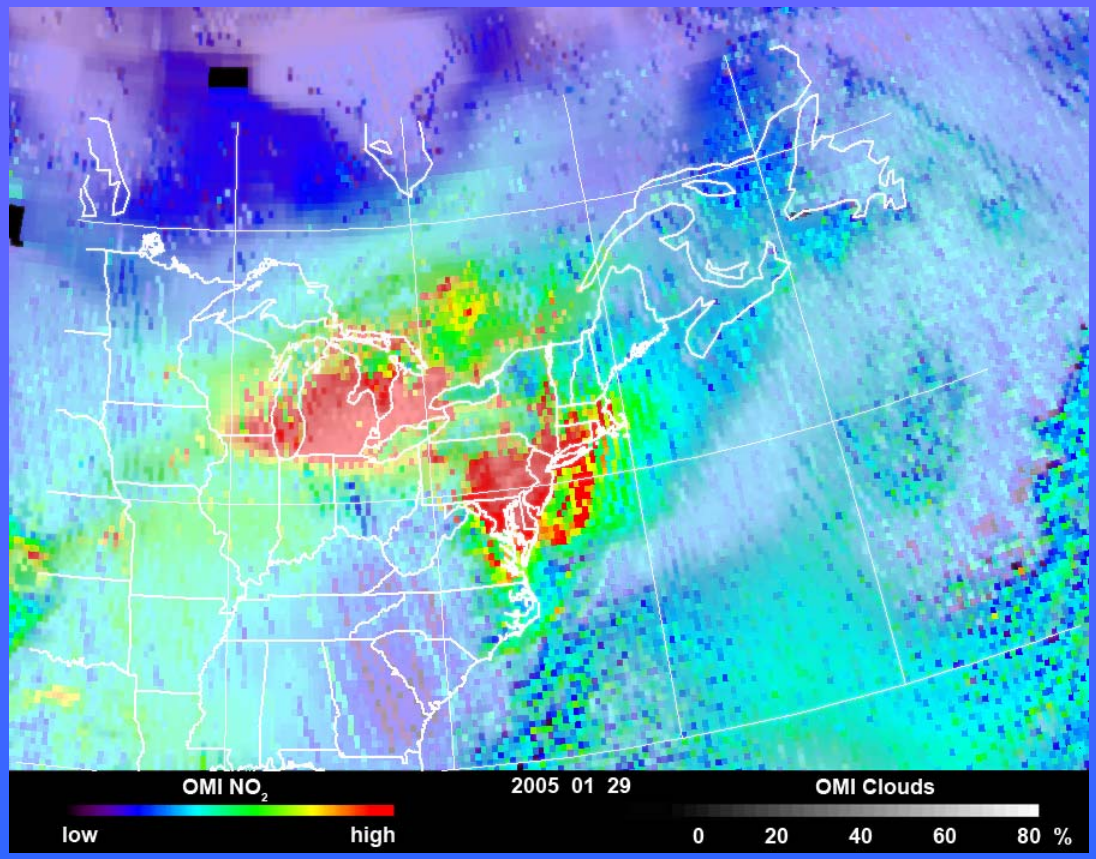
- Ground segment
  - ODPS, TMCF and SIPS are performing according to expectations.
    TMCF will be upgraded with new capabilities
    ODPS/TMCF Operating System upgrade ongoing
  - NRT system is up and running and produces public NRT tropospheric NO2 images.
  - VFD system is operational and produces Ozone, cloud fraction, UV index and UV erythemal dose.



UV-B Erythemal Daily dose

OMI Data Products

- Ozone
  - total column
  - Profile
  - Tropospheric
- NO_2
- Aerosols
- Clouds
  - coverage
  - top pressure
- SO_2
- BrO
- HCHO
- OClO
- Surface UV Irradiance



NO_2 above United States
29 January 2005 (PAVE Campaign)

Courtesy: Bucsela and Gleason (NASA GSFC)
Veefkind (KNMI)

Status of OMI Data Products

Product	Provisional release	Validated Stage 1 release (Public)	Validation Status
- Level 1B	Nov. 2005	April 2006	
- Total Column Ozone (TOMS)	Released	Released	
- Total Column Ozone (DOAS)	Released	Nov. 2005	
- Aerosol[1]	Nov. 2005	March 2006	
- NO_2 total and trop. column	Released	Jan. 2006	
- Cloud Height (O2-O2)	Released	Nov. 2005	
- Cloud Height (Raman)	Released	Nov. 2005	
- Surface UVB	Nov.2005	Feb. 2006	
- HCHO	Nov. 2005	August 2006	
- SO_2	Released	August 2006	
- BrO	October 2005	August 2006	
- OClO	Nov. 2005	November 2006	
- O_3 Profile	January 2006	November 2006	

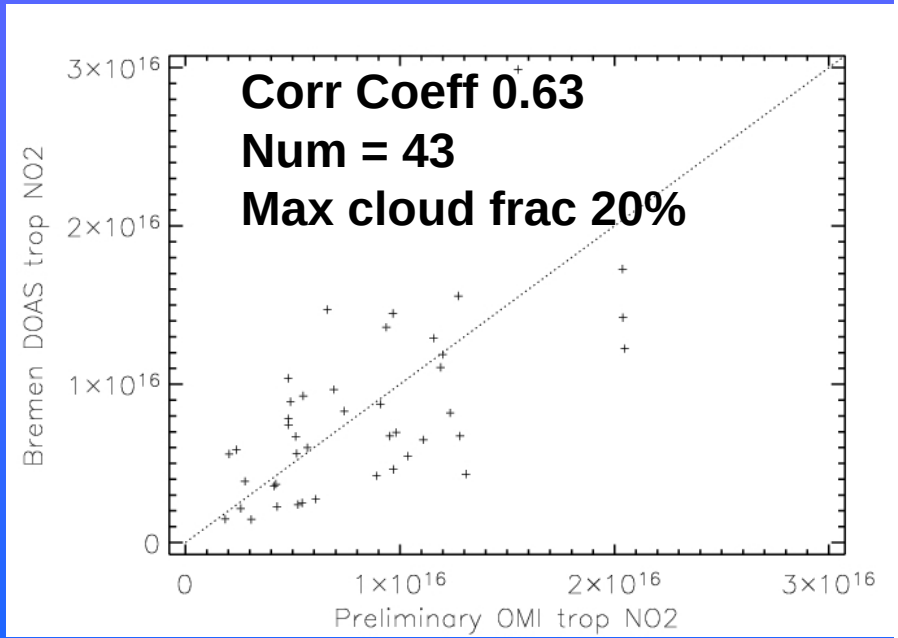
OMI Validation

- **OMI total ozone preliminary validation results show that OMI total ozone is on average 2 % accurate for both ozone products (TOMS and DOAS).**

- **OMI took active part in AVE aircraft campaigns. First results look promising (a.o. CAFS).**

- **NO2 and aerosol validation campaign took place at Cabauw (near KNMI) this summer. Several European groups participated. DANDELIONS.**

Presentation by Ellen Brinksma.



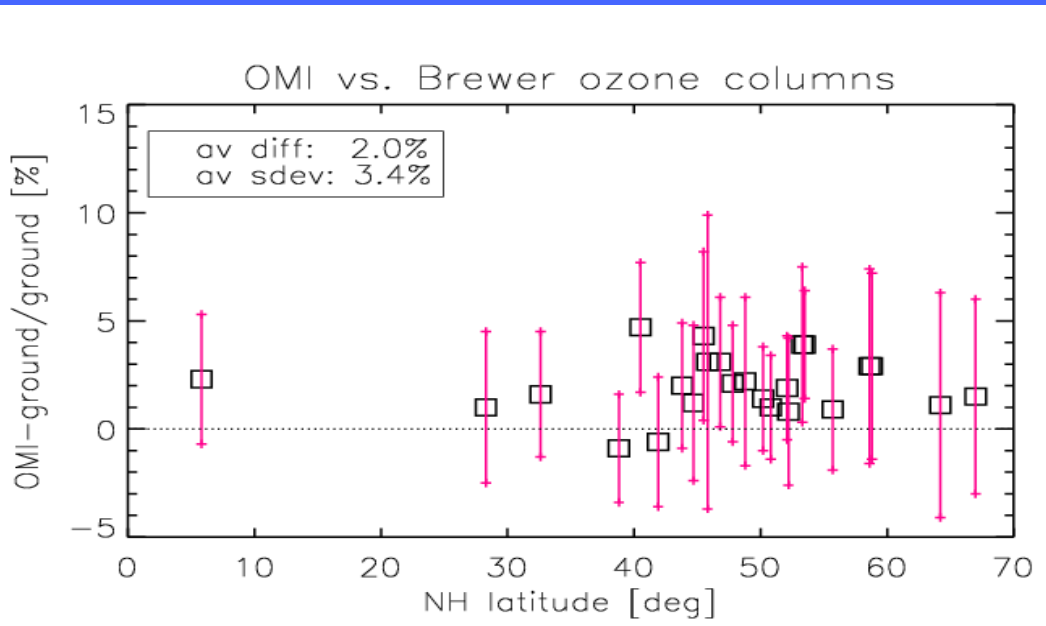
Courtesy: A. Richter (Bremen) and E. Brinksma (KNMI)

OMI Validation

- NRA and AO Validation PI's were selected and validation effort started.
- Data released towards AVDC.
- Validation O_3 DOAS, cloud products and SO2 started
- Validation NO_2 , BrO, HCHO, OClO, level 1b will start soon
- Sauna – Södankyla validation O3 low sun and large slant column.

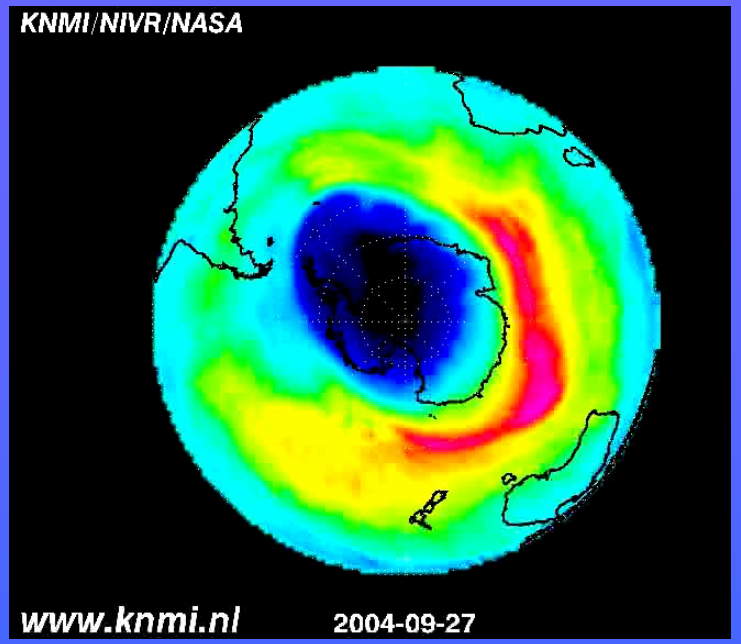
Sep 28, 2004 – Sep 9, 2005 ;
OMDOA provisional release

Courtesy: Brinksma (KNMI)
Presentation today (Tuesday)



Is the ozone layer recovering as expected ?

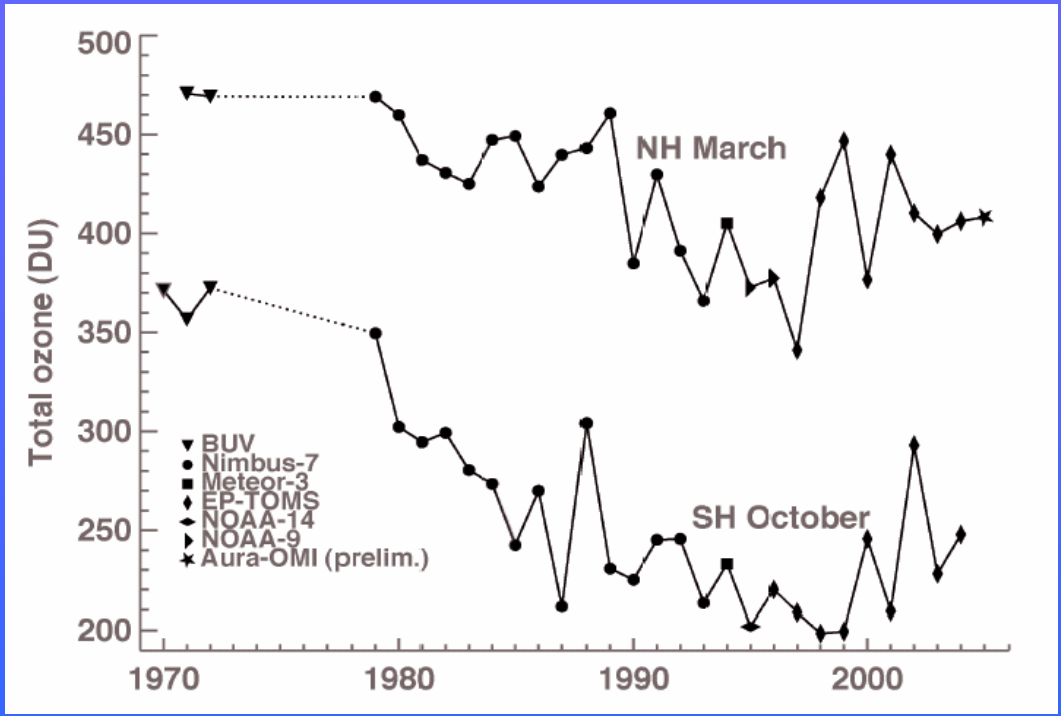
- Need for long ozone column trends: extend existing records
- Contribute to understanding development ozone hole (predict ozone (hole) development)
- Develop optimal ozone retrieval algorithm based on TOMS and DOAS retrieval



Movie Antarctic Ozone Hole 2004 and 2005 measured by OMI, based on KNMI's DOAS retrieval

Courtesy of P. Veefkind (KNMI)

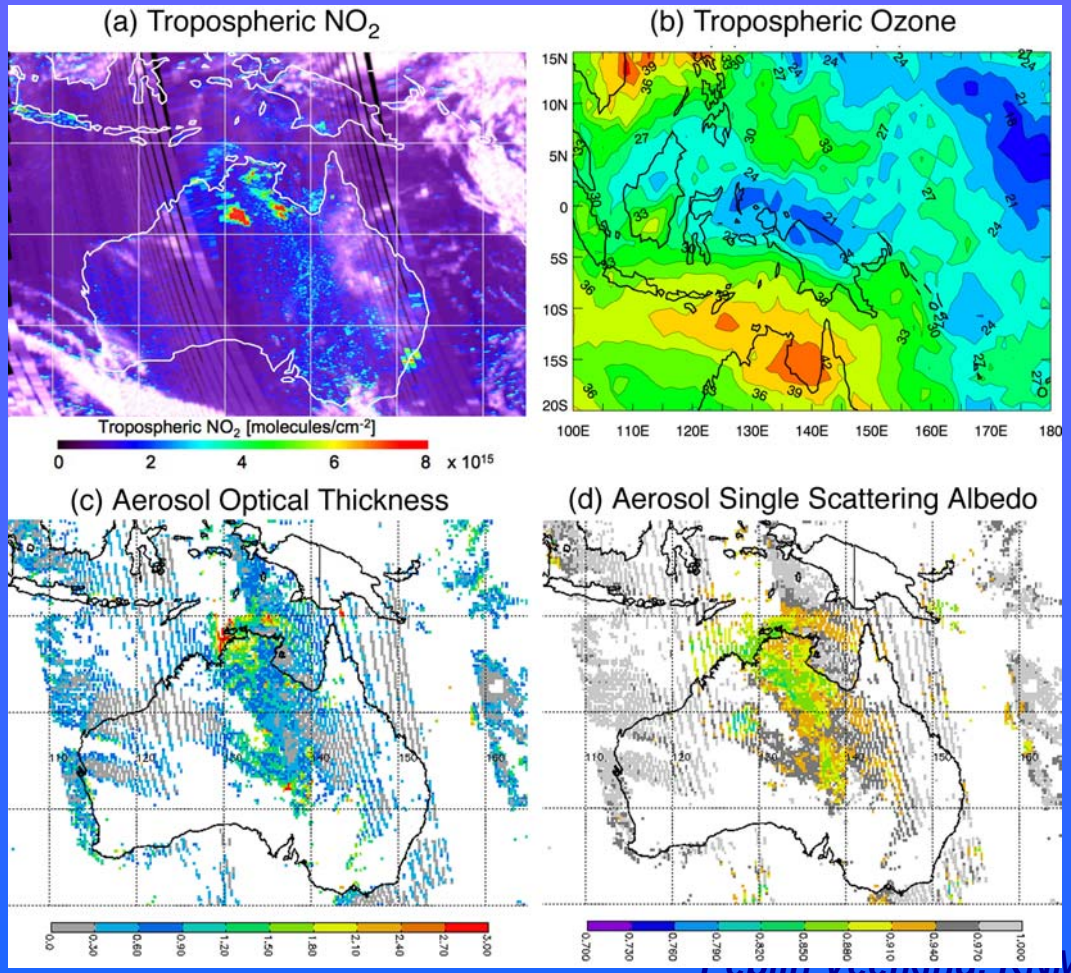
First OMI data to IPCC



Average column ozone pole ward of 63 latitude in the springtime of each hemisphere (March for the NH and October for the SH), in Dobson units, based on data from various satellite instruments as indicated. Data point from the Ozone Monitoring Instrument (OMI) is preliminary. Figure is updated from Newman et al. (1997)

IPCC/TEAP Special Report: Safeguarding the ozone layer and the global climate system: Issues related to the hydrofluorocarbons and perfluorocarbons, Summary for Policy Makers, WMO/UNEP, 2005.

What are the sources of aerosols and trace gases that affect global air quality and how are they transported?



Pepijn Veefkind, KNMI

Aerosols, NO2 and trop O3 from Biomass burning, Australia, 11-10-2004

Omar Torres ,

Jerry Ziemke,

Bucsela

(NASA GSFC),

Veefkind (KNMI)

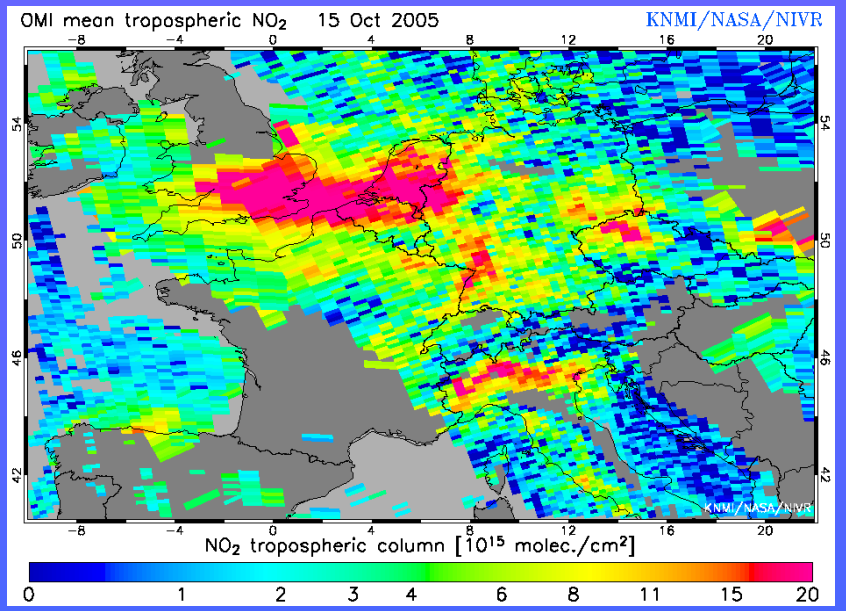
See presentations Fishman, Veefkind, Boersma. Van der A and Pickering today

Press release on
tropospheric NO2
Near Real Time service
at KNMI website

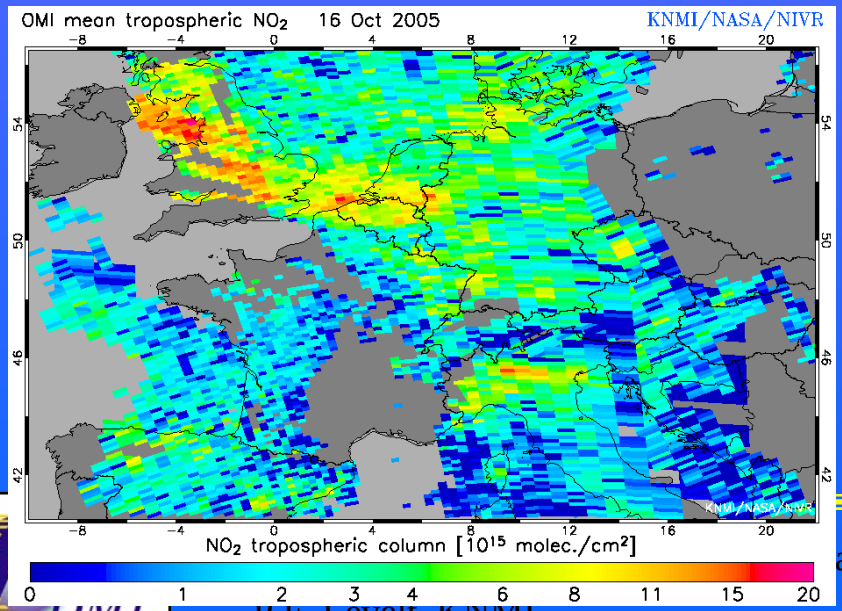
17 October 2005

Presentation Boersma Today

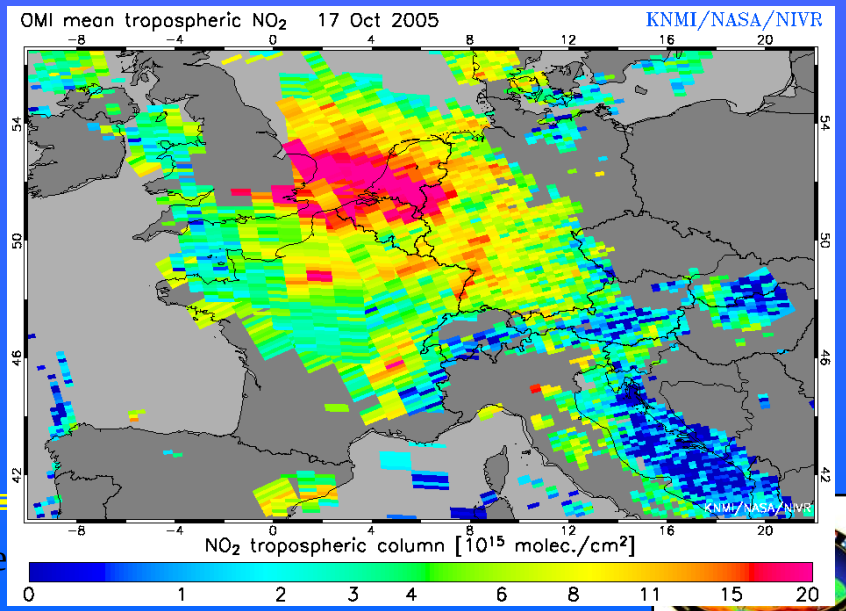
Saturday 15 October 2005



Sunday 16 October 2005



Monday 17 October 2005



OMI - Nieuws: OMI metingen luchtvervuiling door stikstofdioxide nu dagelijks online - Microsoft Internet Explorer

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Back Search Favorites

Address http://www.knmi.nl/omi/publ-nl/nieuws/2005-10-18_omi_nrt_trop_no2.html Go

Links AVDC AVE June 2005 ESA OMI AO Google NL Google UK Google Maps MapBlast OMI SSTCW OMI Val KNMI SCIAMACHY Val TEMIS Webmail

Ozone Monitoring Instrument

Zoek!

KNMI

NIEUWS/Info MISSIE METINGEN INSTRUMENT

MULTIMEDIA DOCUMENTEN LINKS WOORDENLIJST

Public site

Research

Home → nieuws → 2005-10-18 omi nrt trop no2

OMI metingen luchtvervuiling door stikstofdioxide nu dagelijks online

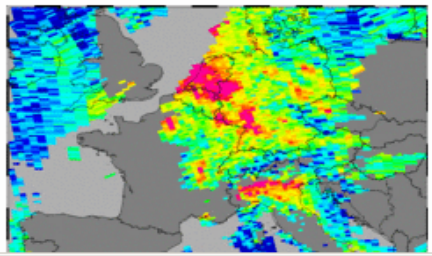
Dinsdag, 18 oktober 2005.

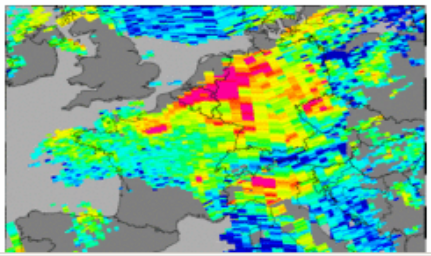
http://www.knmi.nl/omi

de luchtvervuiling in de troposfeer, dit is de onderste laag van de atmosfeer waarin wij leven. De zes plaatjes hieronder laten de troposferische stikstofdioxide verdeling boven Europa zien rond het afgelopen weekeinde. Duidelijk is te zien dat zondag de schoonste dag is. De metingen geven de situatie weer rond 14:00 uur (Nederlandse tijd).

Klik op een figuur voor een uitvergroting

Legenda kleuren
Blauw: lage concentratie stikstofdioxide,
Grijs: geen metingen omdat wolken "in de weg" zaten,
Rood: veel hogere concentratie stikstofdioxide.





Laatste Nieuws
- Overzicht
- Aura nieuws (Engels)
- Laatste nieuws aardatmosfeer onderzoek (Engels)
- 09-05-05: Mondiale luchtvervuiling nauwkeuriger in kaart gebracht
- 02-05-05: Weerbericht van de luchtkwaliteit
- 31-12-04: Satellietwaarnemingen van luchtvervuiling
- 23-11-04: NO_2 vervuiling boven NL
- 15-07-04: OMI Lancering
- 10-06-04: Voortuitblik OMI Lancering

Over deze website
- Contact Informatie
- Website veranderingen

Meer over dit bericht
- Veel gestelde vragen (FAQ)
- OMI trop. NO2 archief op TEMIS
- KNMI Persbericht
- RIVM grondmetingen
- Andere Europese grondmetingen

Hoge re… de figuren
- D… OF, 371 kB)
- Donderdag 13 okt. (JPG, 371 kB)

print deze pagina
terug naar boven

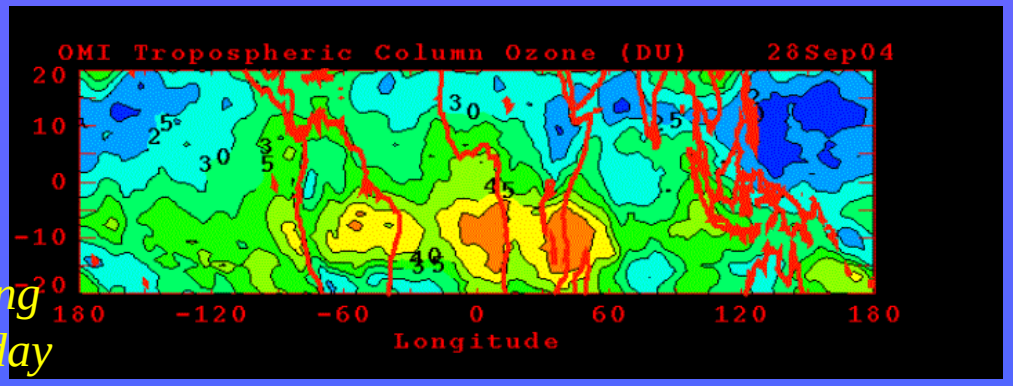
Done

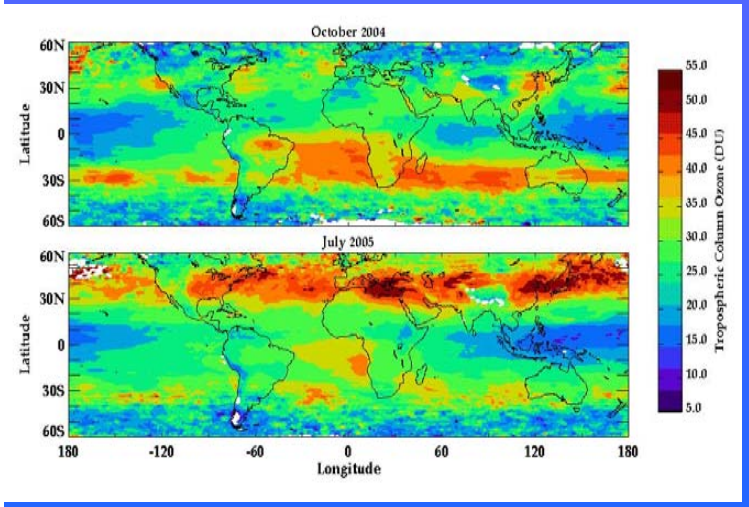
Internet

What are the roles of tropospheric ozone and aerosols in climate change ?

Trop.Ozone
cloud slicing method
Ziemke et al.

Presentations Fishman, Pickering
Presentation Landgraf Wednesday

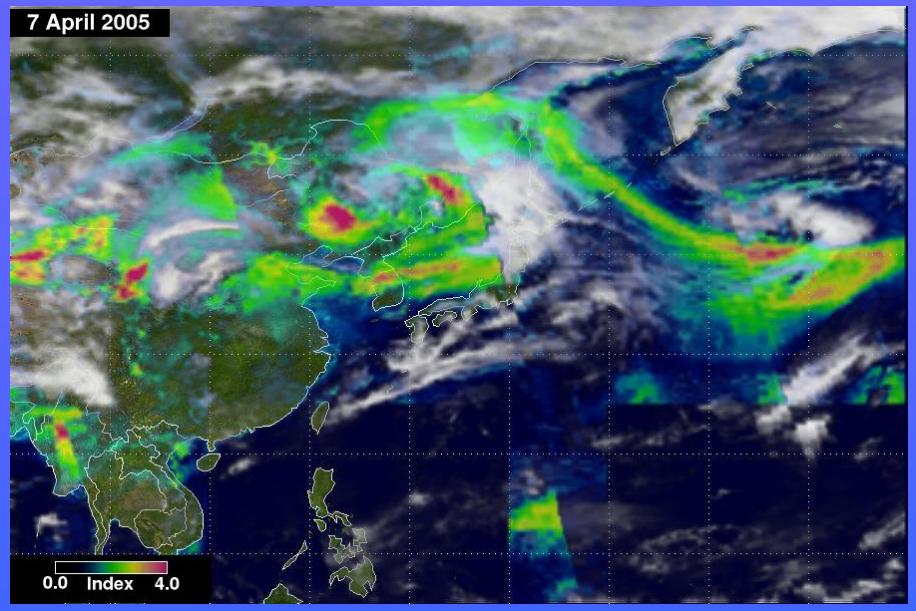


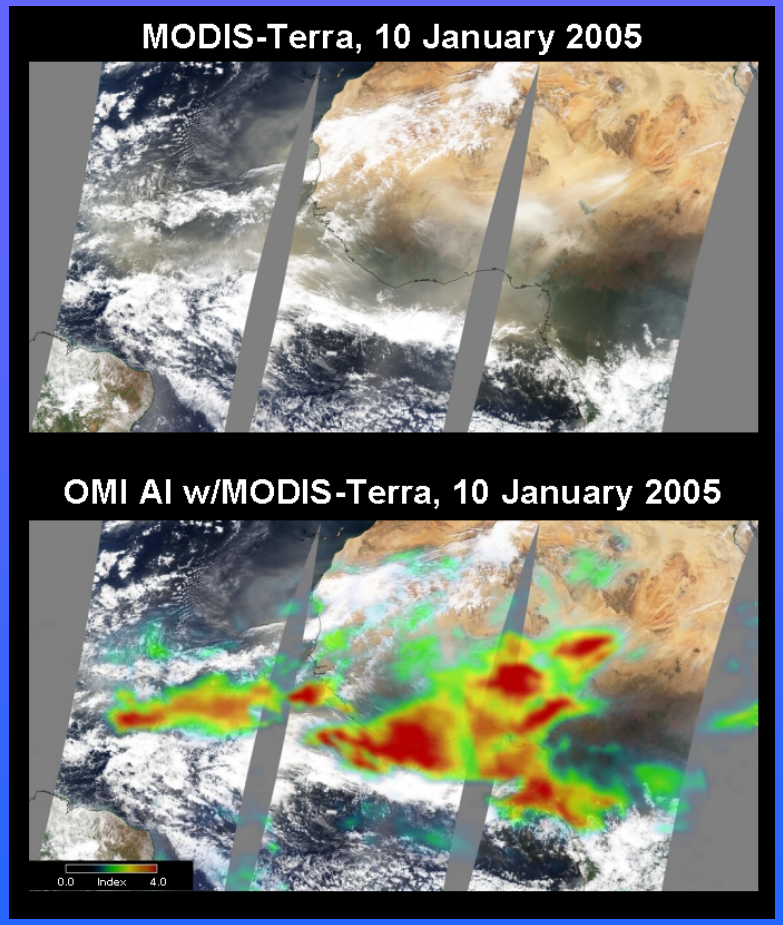


MLS/OMI tropospheric ozone

- Improve on accuracy ozone measurements (“super-algorithm”) to obtain tropospheric ozone
- Contribution to distinguishing antropogenic and natural aerosols
- Aerosol A-train measurements: OMI adds absorbing aerosols (UV)
- Continue TOMS aerosol record

Aerosol Detection in Presence of Clouds: A Unique OMI Capability



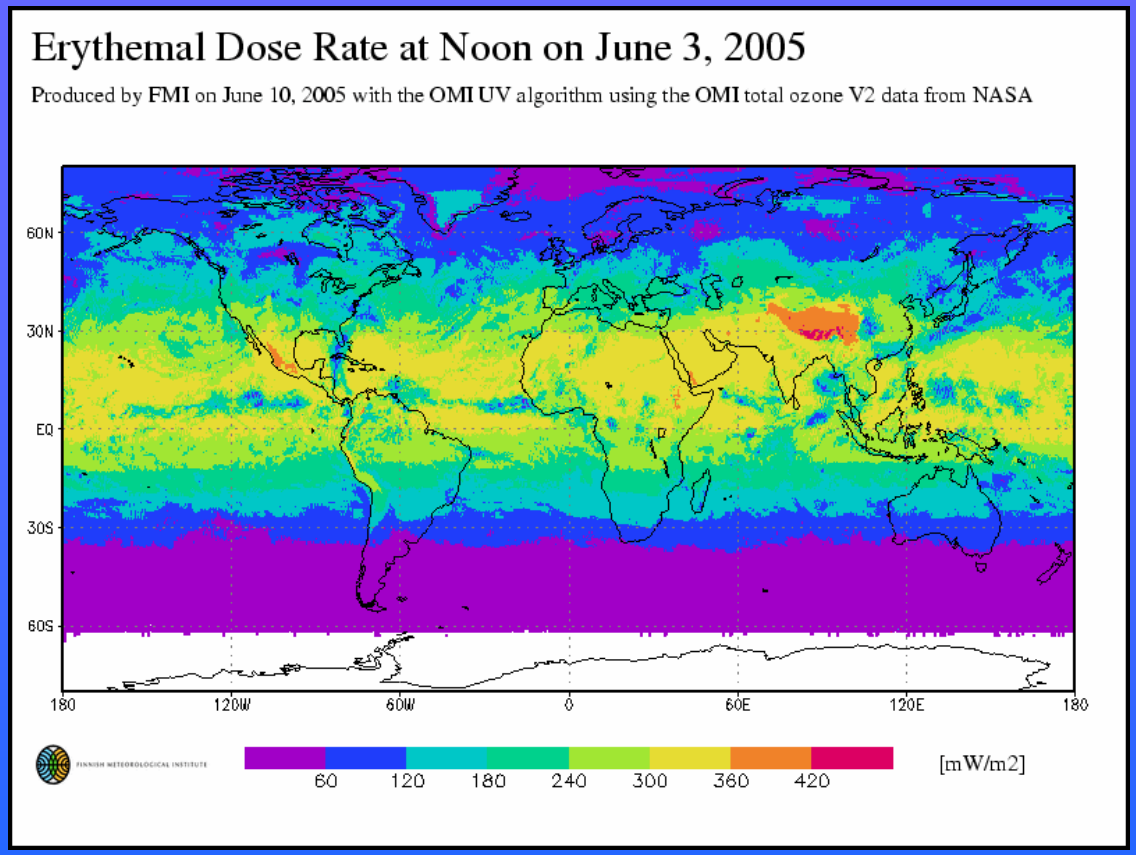


OMI Aerosol Index (color scale)
OMI reflectivity (gray scale)

Torres, Bhartia, NASA GSFC

Poster Courier, TNO-FEL/KNMI, Wednesday

What are the causes of surface UV-B change?



Courtesy Tanskanen, Tamminen, FMI

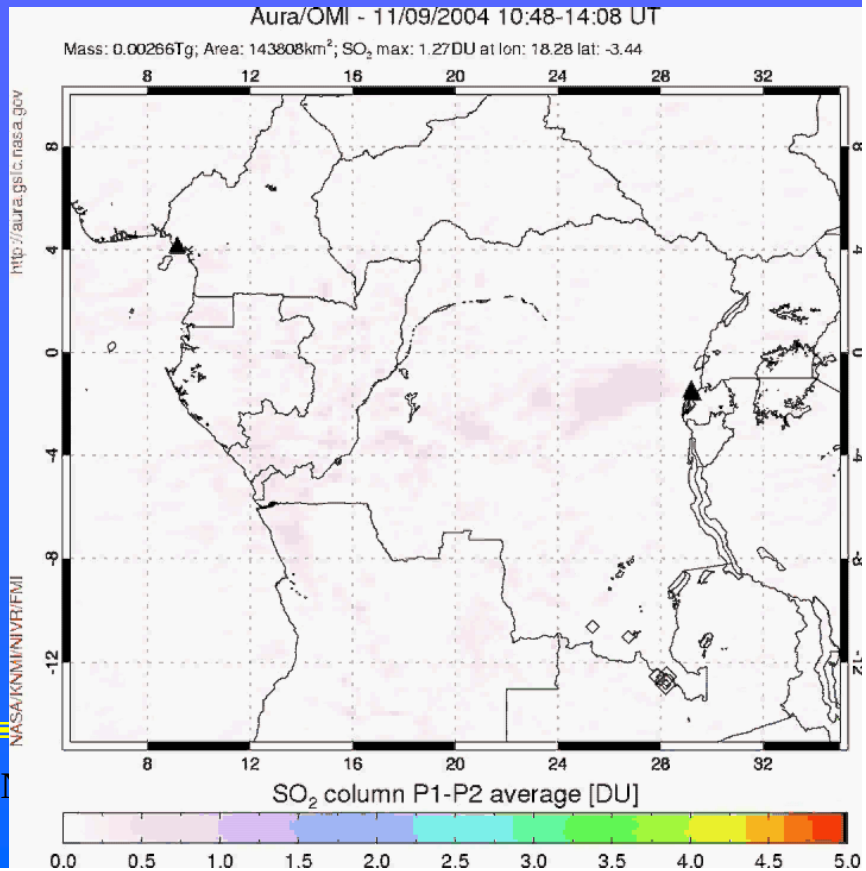
See poster Tanskanen Wednesday

Conclusions

- OMI operations and data processing are doing fine.
- All OMI Standard Data products have been produced, except for ozone profile.
- OMI's detector suffers from degradation (dark current): measures are taken.
- Large set of OMI data products are in the process of provisional release.
- Validation of OMI data products started and major validation effort can start now most products will be provisional released.

Courtesy: Carn & Krueger (GSFC/UMBC)

Presentation SO2 Krotkov Thursday



Backup